



SEQUENCE LISTING

RECEIVED
OCT 23 2001
TECH CENTER 1600/2900

<110> Astra AB, Järfälla, Sweden

<120> Vaccine Delivery System and Method of Production

<130> 1103326-0560

<140> 09/308,435

<141> 1999-05-19

<150> PCT/SE99/00582

<151> 1999-04-09

<150> SE 9801288-3

<151> 1998-04-14

<160> 25

<170> PatentIn Ver. 2.1

<210> 1

<211> 1670

<212> DNA

<213> Helicobacter pylori

<220>

<221> CDS

<222> (793) .. (1572)

<400> 1

gacccctatcg cgccaaaggt ggtattagga ataagagctt gattattaat ctccctggta 60
agtccaaaaa gtattagaga atgcttagag gcgggtttttc cagcgattcc ttattgctgtg 120
gatttgattt tagggaatta catgcaagtg aatgaaaaaa acattcaagc gtttgccccc 180
aaacaataag gtaaaaaatg ccaactcactc atttgaatga agaaaatcaa cctaaaatgg 240
tggatatagg ggataaagaa accactgaaa gaatcgctct agcaagcggg cgtatcagca 300
tgaataaaga ggcttatgac gctattatca atcatggcgt caaaaagggt ccggtattac 360
aaactgctat tattgctggg attatggggg ctaaaaagac aagcgaactc attcccatgt 420
gccatccaat catgctcaat ggggtggata ttgatatttt agaagaaaaa gagacttgta 480
gttttaaaact ctatgcgaga gtcaaaaactc aagctaaaac gggcgtagaa atggaagcgc 540
taatgagtgt gagcgtaggg cttttaacca tttatgacat ggtgaaagcc attgataaga 600
gcatgacaat tagcgggtgtg atgctggaat ataaaagtgg aggcaaaagt ggggattata 660

acgctaaaaa atagaaaaag actgataatc taaagatatt agggtaaaaat aacattttga 720

caacaaaagc gtgttggttg cttcggattt gttgttatag aagtctaaaaa tattacaatc 780

aaggatagaa cg atg aga gca aat aat cat ttt aaa gat ttt gca tgg aaa 831
Met Arg Ala Asn Asn His Phe Lys Asp Phe Ala Trp Lys
1 5 10

aaa tgc ctt tta ggc gcg agc gtg gtg gct tta tta gtg gga tgc agc 879
Lys Cys Leu Leu Gly Ala Ser Val Val Ala Leu Leu Val Gly Cys Ser
15 20 25

ccg cat att att gaa acc aat gaa gtc gct ttg aaa ttg aat tac cat 927
Pro His Ile Ile Glu Thr Asn Glu Val Ala Leu Lys Leu Asn Tyr His
30 35 40 45

cca gct agc gag aaa gtt caa gcg tta gat gaa aag att ttg ctt tta 975
Pro Ala Ser Glu Lys Val Gln Ala Leu Asp Glu Lys Ile Leu Leu Leu
50 55 60

agg cca gct ttc caa tat agc gat aat atc gct aaa gag tat gaa aac 1023
Arg Pro Ala Phe Gln Tyr Ser Asp Asn Ile Ala Lys Glu Tyr Glu Asn
65 70 75

aaa ttc aag aat caa acc gcg ctc aag gtt gaa cag att ttg caa aat 1071
Lys Phe Lys Asn Gln Thr Ala Leu Lys Val Glu Gln Ile Leu Gln Asn
80 85 90

caa ggc tat aag gtt att agc gta gat agc agc gat aaa gac gat ttt 1119
Gln Gly Tyr Lys Val Ile Ser Val Asp Ser Ser Asp Lys Asp Asp Phe
95 100 105

tct ttt gca caa aaa aaa gaa ggg tat ttg gcg gtt gct atg aat ggc 1167
Ser Phe Ala Gln Lys Lys Glu Gly Tyr Leu Ala Val Ala Met Asn Gly
110 115 120 125

gaa att gtt tta cgc ccc gat cct aaa agg acc ata cag aaa aaa tca 1215
Glu Ile Val Leu Arg Pro Asp Pro Lys Arg Thr Ile Gln Lys Lys Ser
130 135 140

gaa ccc ggg tta tta ttc tcc acc ggt ttg gac aaa atg gaa ggg gtt 1263
Glu Pro Gly Leu Leu Phe Ser Thr Gly Leu Asp Lys Met Glu Gly Val
145 150 155

tta atc ccg gct ggg ttt att aag gtt acc ata cta gag cct atg agt 1311
Leu Ile Pro Ala Gly Phe Ile Lys Val Thr Ile Leu Glu Pro Met Ser
160 165 170

ggg gaa tct ttg gat tct ttt acg atg gat ttg agc gag ttg gac att 1359
Gly Glu Ser Leu Asp Ser Phe Thr Met Asp Leu Ser Glu Leu Asp Ile
175 180 185

caa gaa aaa ttc tta aaa acc acc cat tca agc cat agc ggg ggg tta 1407
 Gln Glu Lys Phe Leu Lys Thr Thr His Ser Ser His Ser Gly Gly Leu
 190 195 200 205

gtt agc act atg gtt aag gga acg gat aat tct aat gac gcg atc aag 1455
 Val Ser Thr Met Val Lys Gly Thr Asp Asn Ser Asn Asp Ala Ile Lys
 210 215 220

agc gct ttg aat aag att ttt gca aat atc atg caa gaa ata gac aaa 1503
 Ser Ala Leu Asn Lys Ile Phe Ala Asn Ile Met Gln Glu Ile Asp Lys
 225 230 235

aaa ctc act caa aag aat tta gaa tct tat caa aaa gac gcc aaa gaa 1551
 Lys Leu Thr Gln Lys Asn Leu Glu Ser Tyr Gln Lys Asp Ala Lys Glu
 240 245 250

tta aaa ggc aaa aga aac cga taaaaacaaa taacgcataa gaaaagaacg 1602
 Leu Lys Gly Lys Arg Asn Arg
 255 260

cttgaataaa ctgcttaaaa aggggtttttt agcggttcttt ttgagcgtgt atttaagggc 1662

tgatgatc 1670

<210> 2

<211> 260

<212> PRT

<213> Helicobacter pylori

<400> 2

Met Arg Ala Asn Asn His Phe Lys Asp Phe Ala Trp Lys Lys Cys Leu
 1 5 10 15

Leu Gly Ala Ser Val Val Ala Leu Leu Val Gly Cys Ser Pro His Ile
 20 25 30

Ile Glu Thr Asn Glu Val Ala Leu Lys Leu Asn Tyr His Pro Ala Ser
 35 40 45

Glu Lys Val Gln Ala Leu Asp Glu Lys Ile Leu Leu Leu Arg Pro Ala
 50 55 60

Phe Gln Tyr Ser Asp Asn Ile Ala Lys Glu Tyr Glu Asn Lys Phe Lys
 65 70 75 80

Asn Gln Thr Ala Leu Lys Val Glu Gln Ile Leu Gln Asn Gln Gly Tyr
 85 90 95

Lys Val Ile Ser Val Asp Ser Ser Asp Lys Asp Asp Phe Ser Phe Ala
 100 105 110

Gln Lys Lys Glu Gly Tyr Leu Ala Val Ala Met Asn Gly Glu Ile Val
 115 120 125
 Leu Arg Pro Asp Pro Lys Arg Thr Ile Gln Lys Lys Ser Glu Pro Gly
 130 135 140
 Leu Leu Phe Ser Thr Gly Leu Asp Lys Met Glu Gly Val Leu Ile Pro
 145 150 155 160
 Ala Gly Phe Ile Lys Val Thr Ile Leu Glu Pro Met Ser Gly Glu Ser
 165 170 175
 Leu Asp Ser Phe Thr Met Asp Leu Ser Glu Leu Asp Ile Gln Glu Lys
 180 185 190
 Phe Leu Lys Thr Thr His Ser Ser His Ser Gly Gly Leu Val Ser Thr
 195 200 205
 Met Val Lys Gly Thr Asp Asn Ser Asn Asp Ala Ile Lys Ser Ala Leu
 210 215 220
 Asn Lys Ile Phe Ala Asn Ile Met Gln Glu Ile Asp Lys Lys Leu Thr
 225 230 235 240
 Gln Lys Asn Leu Glu Ser Tyr Gln Lys Asp Ala Lys Glu Leu Lys Gly
 245 250 255
 Lys Arg Asn Arg
 260

<210> 3
 <211> 1670
 <212> DNA
 <213> Helicobacter pylori

<220>
 <221> CDS
 <222> (793)..(1572)

<400> 3
 gatcctatcg cgccaaaggt ggtattagga ataagagctt gattattaat ctccctggta 60
 agtccaaaaa gtattagaga atgcttagag gcggtttttc cagcgattcc ttattgcgtg 120
 gatttgattt tagggaatta catgcaagtg aatgaaaaaa acattcaagc gtttgccccc 180
 aaacaataag gtaaaaaatg ccaatcactc atttgaatga agaaaatcaa cctaaaatgg 240
 tggatatagg ggataaagaa accactgaaa gaatcgctct agcaagcggg cgtatcagca 300

tgaataaaga ggcttatgac gctattatca atcatggcgt caaaaagggt ccggtattac 360
 aaactgctat tattgctggg attatggggg ctaaaaagac aagcgaactc attcccatgt 420
 gccatccaat catgctcaat ggggtggata ttgatatttt agaagaaaaa gagacttgta 480
 gttttaaact ctatgcgaga gtcaaaactc aagctaaaac gggcgtagaa atggaagcgc 540
 taatgagtgt gagcgtaggg cttttaacca tttatgacat ggtgaaagcc attgataaga 600
 gcatgacaat tagcgggtgtg atgctggaat ataaaagtgg aggcaaaagt ggggattata 660
 acgctaaaaa atagaaaaag actgataatc taaagatatt agggtaaaat aacattttga 720
 caacaaaagc gtgttggttg cttcggattt gttgttatag aagtctaaaa tattacaatc 780
 aaggatagaa cg atg aga gca aat aat cat ttt aaa gat ttt gca tgg aaa 831
 Met Arg Ala Asn Asn His Phe Lys Asp Phe Ala Trp Lys
 1 5 10
 aaa tgc ctt tta ggc gcg agc gtg gtg gct tta tta gtg gga tgc agc 879
 Lys Cys Leu Leu Gly Ala Ser Val Val Ala Leu Leu Val Gly Cys Ser
 15 20 25
 ccg cat att att gaa acc aat gaa gtc gct ttg aaa ttg aat tac cat 927
 Pro His Ile Ile Glu Thr Asn Glu Val Ala Leu Lys Leu Asn Tyr His
 30 35 40 45
 cca gct agc gag aaa gtt caa gcg tta gat gaa aag att ttg ctt tta 975
 Pro Ala Ser Glu Lys Val Gln Ala Leu Asp Glu Lys Ile Leu Leu Leu
 50 55 60
 agg cca gct ttc caa tat agc gat aat atc gct aaa gag tat gaa aac 1023
 Arg Pro Ala Phe Gln Tyr Ser Asp Asn Ile Ala Lys Glu Tyr Glu Asn
 65 70 75
 aaa ttc aag aat caa acc gcg ctc aag gtt gaa cag att ttg caa aat 1071
 Lys Phe Lys Asn Gln Thr Ala Leu Lys Val Glu Gln Ile Leu Gln Asn
 80 85 90
 caa ggc tat aag gtt att agc gta gat agc agc gat aaa gac gat ttt 1119
 Gln Gly Tyr Lys Val Ile Ser Val Asp Ser Ser Asp Lys Asp Asp Phe
 95 100 105
 tct ttt gca caa aaa aaa gaa ggg tat ttg gcg gtt gct atg aat ggc 1167
 Ser Phe Ala Gln Lys Lys Glu Gly Tyr Leu Ala Val Ala Met Asn Gly
 110 115 120 125
 gaa att gtt tta cgc ccc gat cct aaa agg acc ata cag aaa aaa tca 1215
 Glu Ile Val Leu Arg Pro Asp Pro Lys Arg Thr Ile Gln Lys Lys Ser
 130 135 140

gaa ccc ggg tta tta ttc tcc acc ggt ttg gac aaa atg gaa ggg gtt 1263
 Glu Pro Gly Leu Leu Phe Ser Thr Gly Leu Asp Lys Met Glu Gly Val
 145 150 155

 tta atc ccg gct ggg ttt att aag gtt acc ata cta gag cct atg agt 1311
 Leu Ile Pro Ala Gly Phe Ile Lys Val Thr Ile Leu Glu Pro Met Ser
 160 165 170

 ggg gaa tct ttg gat tct ttt acg atg gat ttg agc gag ttg gac att 1359
 Gly Glu Ser Leu Asp Ser Phe Thr Met Asp Leu Ser Glu Leu Asp Ile
 175 180 185

 caa gaa aaa ttc tta aaa acc acc cat tca agc cat agc ggg ggg tta 1407
 Gln Glu Lys Phe Leu Lys Thr Thr His Ser Ser His Ser Gly Gly Leu
 190 195 200 205

 gtt agc act atg gtt aag gga acg gat aat tct aat gac gcg atc aag 1455
 Val Ser Thr Met Val Lys Gly Thr Asp Asn Ser Asn Asp Ala Ile Lys
 210 215 220

 aga gct ttg aat aag att ttt gca aat atc atg caa gaa ata gac aaa 1503
 Arg Ala Leu Asn Lys Ile Phe Ala Asn Ile Met Gln Glu Ile Asp Lys
 225 230 235

 aaa ctc act caa aag aat tta gaa tct tat caa aaa gac gcc aaa gaa 1551
 Lys Leu Thr Gln Lys Asn Leu Glu Ser Tyr Gln Lys Asp Ala Lys Glu
 240 245 250

 tta aaa ggc aaa aga aac cga taaaaacaaa taacgcataa gaaaagaacg 1602
 Leu Lys Gly Lys Arg Asn Arg
 255 260

 cttgaataaaa ctgcttaaaaa aggggtttttt agcgttcttt ttgagcgtgt atttaagggc 1662

 tgatgatac 1670

<210> 4
 <211> 260
 <212> PRT
 <213> Helicobacter pylori

<400> 4
 Met Arg Ala Asn Asn His Phe Lys Asp Phe Ala Trp Lys Lys Cys Leu
 1 5 10 15

 Leu Gly Ala Ser Val Val Ala Leu Leu Val Gly Cys Ser Pro His Ile
 20 25 30

 Ile Glu Thr Asn Glu Val Ala Leu Lys Leu Asn Tyr His Pro Ala Ser
 35 40 45

Glu Lys Val Gln Ala Leu Asp Glu Lys Ile Leu Leu Leu Arg Pro Ala
 50 55 60
 Phe Gln Tyr Ser Asp Asn Ile Ala Lys Glu Tyr Glu Asn Lys Phe Lys
 65 70 75 80
 Asn Gln Thr Ala Leu Lys Val Glu Gln Ile Leu Gln Asn Gln Gly Tyr
 85 90 95
 Lys Val Ile Ser Val Asp Ser Ser Asp Lys Asp Asp Phe Ser Phe Ala
 100 105 110
 Gln Lys Lys Glu Gly Tyr Leu Ala Val Ala Met Asn Gly Glu Ile Val
 115 120 125
 Leu Arg Pro Asp Pro Lys Arg Thr Ile Gln Lys Lys Ser Glu Pro Gly
 130 135 140
 Leu Leu Phe Ser Thr Gly Leu Asp Lys Met Glu Gly Val Leu Ile Pro
 145 150 155 160
 Ala Gly Phe Ile Lys Val Thr Ile Leu Glu Pro Met Ser Gly Glu Ser
 165 170 175
 Leu Asp Ser Phe Thr Met Asp Leu Ser Glu Leu Asp Ile Gln Glu Lys
 180 185 190
 Phe Leu Lys Thr Thr His Ser Ser His Ser Gly Gly Leu Val Ser Thr
 195 200 205
 Met Val Lys Gly Thr Asp Asn Ser Asn Asp Ala Ile Lys Arg Ala Leu
 210 215 220
 Asn Lys Ile Phe Ala Asn Ile Met Gln Glu Ile Asp Lys Lys Leu Thr
 225 230 235 240
 Gln Lys Asn Leu Glu Ser Tyr Gln Lys Asp Ala Lys Glu Leu Lys Gly
 245 250 255
 Lys Arg Asn Arg
 260

<210> 5
 <211> 60
 <212> PRT
 <213> Helicobacter pylori

<400> 5
 Met Lys Thr Asn Gly His Phe Lys Asp Phe Ala Trp Lys Lys Cys Leu

1	5	10	15
Leu Gly Thr Ser Val Val Ala Leu Leu Val Gly Cys Ser Pro His Ile			
20	25	30	
Ile Glu Thr Asn Glu Val Ala Leu Lys Leu Asn Tyr His Pro Ala Ser			
35	40	45	
Glu Lys Val Gln Ala Leu Asp Glu Lys Ile Leu Leu			
50	55	60	

<210> 6
 <211> 60
 <212> PRT
 <213> Helicobacter pylori

<400> 6
Met Lys Thr Asn Gly His Phe Lys Asp Phe Ala Trp Lys Lys Cys Phe
1 5 10 15
Leu Gly Ala Ser Val Val Ala Leu Leu Val Gly Cys Ser Pro His Ile
20 25 30
Ile Glu Thr Asn Glu Val Ala Leu Lys Leu Asn Tyr His Pro Ala Ser
35 40 45
Glu Lys Val Gln Ala Leu Asp Glu Lys Ile Leu Leu
50 55 60

<210> 7
 <211> 60
 <212> PRT
 <213> Helicobacter pylori

<400> 7
Met Lys Thr Asn Gly His Phe Lys Asp Phe Ala Trp Lys Lys Cys Leu
1 5 10 15
Leu Gly Ala Ser Val Gly Ala Leu Leu Val Gly Cys Ser Pro His Ile
20 25 30
Ile Glu Thr Asn Glu Val Ala Leu Lys Leu Asn Tyr His Pro Ala Ser
35 40 45
Glu Lys Val Gln Ala Leu Asp Glu Lys Ile Leu Leu
50 55 60

<210> 8
 <211> 60

<212> PRT
<213> Helicobacter pylori

<400> 8

Met Arg Ala Asn Asn His Phe Lys Asp Phe Ala Trp Lys Lys Cys Leu
1 5 10 15

Leu Gly Ala Ser Val Val Ala Leu Leu Val Gly Cys Ser Pro His Ile
20 25 30

Ile Glu Thr Asn Glu Val Ala Leu Lys Leu Asn Tyr His Pro Ala Ser
35 40 45

Glu Lys Val Gln Ala Leu Asp Glu Lys Ile Leu Leu
50 55 60

<210> 9

<211> 60

<212> PRT

<213> Helicobacter pylori

<400> 9

Met Lys Ala Asn Asn His Phe Lys Asp Phe Ala Trp Lys Lys Cys Leu
1 5 10 15

Leu Gly Ala Ser Val Val Ala Leu Leu Val Gly Cys Ser Pro His Ile
20 25 30

Ile Glu Thr Asn Glu Val Ala Leu Lys Leu Asn Tyr His Pro Ala Ser
35 40 45

Glu Lys Val Gln Ala Leu Asp Glu Lys Ile Leu Leu
50 55 60

<210> 10

<211> 60

<212> PRT

<213> Helicobacter pylori

<400> 10

Leu Lys Pro Ala Phe Gln Tyr Ser Asp Asn Ile Ala Lys Glu Tyr Glu
1 5 10 15

Asn Lys Phe Lys Asn Gln Thr Thr Leu Lys Val Glu Glu Ile Leu Gln
20 25 30

Asn Gln Gly Tyr Lys Val Ile Asn Val Asp Ser Ser Asp Lys Asp Asp
35 40 45

Phe Ser Phe Ala Gln Lys Lys Glu Gly Tyr Leu Ala

50

55

60

<210> 11

<211> 60

<212> PRT

<213> Helicobacter pylori

<400> 11

Leu Arg Pro Ala Phe Gln Tyr Ser Asp Asn Ile Ala Lys Glu Tyr Glu
 1 5 10 15

Asn Lys Phe Lys Asn Gln Thr Thr Leu Lys Val Glu Glu Ile Leu Gln
 20 25 30

Asn Gln Gly Tyr Lys Val Ile Asn Val Asp Ser Ser Asp Lys Asp Asp
 35 40 45

Phe Ser Phe Ala Gln Lys Lys Glu Gly Tyr Leu Ala
 50 55 60

<210> 12

<211> 60

<212> PRT

<213> Helicobacter pylori

<400> 12

Leu Arg Pro Ala Phe Gln Tyr Ser Asp Asn Ile Ala Lys Glu Tyr Glu
 1 5 10 15

Asn Lys Phe Lys Asn Gln Thr Val Leu Lys Val Glu Gln Ile Leu Gln
 20 25 30

Asn Gln Gly Tyr Lys Val Ile Asn Val Asp Ser Ser Asp Lys Asp Asp
 35 40 45

Phe Ser Phe Ala Gln Lys Lys Glu Gly Tyr Leu Ala
 50 55 60

<210> 13

<211> 60

<212> PRT

<213> Helicobacter pylori

<400> 13

Leu Arg Pro Ala Phe Gln Tyr Ser Asp Asn Ile Ala Lys Glu Tyr Glu
 1 5 10 15

Asn Lys Phe Lys Asn Gln Thr Ala Leu Lys Val Glu Gln Ile Leu Gln
 20 25 30

Asn Gln Gly Tyr Lys Val Ile Ser Val Asp Ser Ser Asp Lys Asp Asp
 35 40 45

Phe Ser Phe Ala Gln Lys Lys Glu Gly Tyr Leu Ala
 50 55 60

<210> 14
 <211> 60
 <212> PRT
 <213> Helicobacter pylori

<400> 14
 Leu Arg Pro Ala Phe Gln Tyr Ser Asp Asn Ile Ala Lys Glu Tyr Glu
 1 5 10 15

Asn Lys Phe Lys Asn Gln Thr Ala Leu Lys Val Glu Gln Ile Leu Gln
 20 25 30

Asn Gln Gly Tyr Lys Val Ile Ser Val Asp Ser Ser Asp Lys Asp Asp
 35 40 45

Leu Ser Phe Ser Gln Lys Lys Glu Gly Tyr Leu Ala
 50 55 60

<210> 15
 <211> 60
 <212> PRT
 <213> Helicobacter pylori

<400> 15
 Val Ala Met Ile Gly Glu Ile Val Leu Arg Pro Asp Pro Lys Arg Thr
 1 5 10 15

Ile Gln Lys Lys Ser Glu Pro Gly Leu Leu Phe Ser Thr Gly Leu Asp
 20 25 30

Lys Met Glu Gly Val Leu Ile Pro Ala Gly Phe Val Lys Val Thr Ile
 35 40 45

Leu Glu Pro Met Ser Gly Glu Ser Leu Asp Ser Phe
 50 55 60

<210> 16
 <211> 60
 <212> PRT
 <213> Helicobacter pylori

<400> 16

Val	Ala	Met	Asn	Gly	Glu	Ile	Val	Leu	Arg	Pro	Asp	Pro	Lys	Arg	Thr
1				5					10					15	
Ile	Gln	Lys	Lys	Ser	Glu	Pro	Gly	Leu	Leu	Phe	Ser	Thr	Gly	Leu	Asp
			20					25					30		
Lys	Met	Glu	Gly	Val	Leu	Ile	Pro	Ala	Gly	Phe	Val	Lys	Val	Thr	Ile
		35					40					45			
Leu	Glu	Pro	Met	Ser	Gly	Glu	Ser	Leu	Asp	Ser	Phe				
	50					55					60				

<210> 17
 <211> 60
 <212> PRT
 <213> Helicobacter pylori

Val	Ala	Met	Asn	Gly	Glu	Ile	Val	Leu	Arg	Pro	Asp	Pro	Lys	Arg	Thr
1				5					10					15	
Ile	Gln	Lys	Lys	Ser	Glu	Pro	Gly	Leu	Leu	Phe	Ser	Thr	Gly	Leu	Asp
			20					25					30		
Lys	Met	Glu	Gly	Val	Leu	Ile	Pro	Ala	Gly	Phe	Ile	Lys	Val	Thr	Ile
		35					40					45			
Leu	Glu	Pro	Met	Ser	Gly	Glu	Ser	Leu	Asp	Ser	Phe				
	50					55					60				

<210> 18
 <211> 60
 <212> PRT
 <213> Helicobacter pylori

Thr	Met	Asp	Leu	Ser	Glu	Leu	Asp	Ile	Gln	Glu	Lys	Phe	Leu	Lys	Thr
1				5					10					15	
Thr	His	Ser	Ser	His	Ser	Gly	Gly	Leu	Val	Ser	Thr	Met	Val	Lys	Gly
			20					25					30		
Thr	Asp	Asn	Ser	Asn	Asp	Ala	Ile	Lys	Ser	Ala	Leu	Asn	Lys	Ile	Phe
		35					40					45			
Ala	Ser	Ile	Met	Gln	Glu	Met	Asp	Lys	Lys	Leu	Thr				
	50					55					60				

<210> 19

<211> 60
<212> PRT
<213> Helicobacter pylori

<400> 19
Thr Met Asp Leu Ser Glu Leu Asp Ile Gln Glu Lys Phe Leu Lys Thr
1 5 10 15
Thr His Ser Ser His Ser Gly Gly Leu Val Ser Thr Met Val Lys Gly
20 25 30
Thr Asp Asn Ser Asn Asp Ala Ile Lys Ser Ala Leu Asn Lys Ile Phe
35 40 45
Gly Ser Ile Met Gln Glu Ile Asp Lys Lys Leu Thr
50 55 60

<210> 20
<211> 60
<212> PRT
<213> Helicobacter pylori

<400> 20
Thr Met Asp Leu Ser Glu Leu Asp Ile Gln Glu Lys Phe Leu Lys Thr
1 5 10 15
Thr His Ser Ser His Ser Gly Gly Leu Val Ser Thr Met Val Lys Gly
20 25 30
Thr Asp Asn Ser Asn Asp Ala Ile Lys Ser Ala Leu Asn Lys Ile Phe
35 40 45
Ala Asn Ile Met Gln Glu Ile Asp Lys Lys Leu Thr
50 55 60

<210> 21
<211> 20
<212> PRT
<213> Helicobacter pylori

<400> 21
Gln Arg Asn Leu Glu Ser Tyr Gln Lys Asp Ala Lys Glu Leu Lys Asn
1 5 10 15
Lys Arg Asn Arg
20

<210> 22

<211> 20
<212> PRT
<213> Helicobacter pylori

<400> 22
Gln Lys Asn Leu Glu Ser Tyr Gln Lys Asp Ala Lys Glu Leu Lys Gly
1 5 10 15

Lys Arg Asn Arg
20

<210> 23
<211> 31
<212> PRT
<213> Helicobacter pylori

<400> 23
Met Arg Ala Asn Asn His Phe Lys Asp Phe Ala Trp Lys Lys Cys Leu
1 5 10 15

Leu Gly Ala Ser Val Val Ala Leu Leu Val Gly Leu Ala Gly Cys
20 25 30

<210> 24
<211> 31
<212> PRT
<213> Helicobacter pylori

<220>
<221> MOD_RES
<222> (31)
<223> n-propyl alcohol attached to sulfhydryl group of
cysteine residue at position 31

<400> 24
Met Arg Ala Asn Asn His Phe Lys Asp Phe Ala Trp Lys Lys Cys Leu
1 5 10 15

Leu Gly Ala Ser Val Val Ala Leu Leu Val Gly Leu Ala Gly Cys
20 25 30

<210> 25
<211> 31
<212> PRT
<213> Helicobacter pylori

<220>
<221> MOD_RES
<222> (31)

<223> lipid chains a and b attached respectively at
positions 3 and 2 of propyl group attached to
sulfhydryl of cysteine residue at position 31

<400> 25

Met	Arg	Ala	Asn	Asn	His	Phe	Lys	Asp	Phe	Ala	Trp	Lys	Lys	Cys	Leu
1				5					10					15	

Leu	Gly	Ala	Ser	Val	Val	Ala	Leu	Leu	Val	Gly	Leu	Ala	Gly	Cys	
			20					25					30		
